



INFORMATION TECHNOLOGY IN AGRICULTURE

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ABSTRACT

Information technologies play a huge role in shaping the sustainable development of the global agricultural market against the backdrop of the rapid growth of the world's population. In this regard, it is important to invest in the development of this area in the agricultural sector. Moreover, it is important to invest in the development of this area in the agricultural sector, as well as conduct more research and experiments.

KEYWORDS: *Automated Information Technology (AIT), Smart Farming, RFID (Radio Frequency Identification), Information And Consulting Center (ICC).*

INTRODUCTION

The creation and operation of information systems in economic management is closely related to the development of information technology - the main component of automated information systems.

Automated information technology (AIT) is a set of methods and means for collecting, registering, processing, transferring, accumulating, searching and protecting information based on the use of software, computers and communication facilities, as well as a set of methods by which information is offered to customers. The demand in market conditions for information and information services has led to the fact that modern information processing technology is focused on the use of a wide range of technical means, computers and communications. On their basis, computer systems and networks of various configurations are created with the aim of accumulating, storing, processing information, maximizing the approach of terminal devices to the workplace of a specialist or a decision-maker.

One of the acute problems of agro-industrial production is the low efficiency and effectiveness of management decisions due to insufficient development of the intellectual and cultural environment in rural areas, insufficient use of new information technologies, including in local economic practice. The study of world trends in the development of technology, the assessment of exhibits at international exhibitions indicate that up to 80% of developments that have received maximum development in recent years are associated with intellectual solutions based on the use of information technologies. The strategic vector of innovative development of agricultural production is associated with the widespread use of information technology, electronics, and automated systems. The intellectual basis for this is fundamental innovative solutions in other areas and industries, which are also successfully used in agriculture.

Information technology in agriculture is, first of all, the implementation, within the framework of applied computer programs, of the tasks of optimizing the placement of agricultural crops in zonal crop rotation systems; calculation of fertilizer doses; selection of high-yielding plant varieties; breeding highly productive breeds of animals, creating biologically active feed additives, new medicines for animals, etc. This is the use of geoinformation technologies for land surveying and land management; maintaining the state land cadastre of the history of fields and the development of technological maps for the cultivation of agricultural crops.

Agriculture is an ideal environment for the application of information technologies (IT). In this regard, for the effective and sustainable functioning of the economic entities of the republic in the new conditions, it is necessary to use advanced information technologies that make it possible to identify their internal reserves, attract external investments, as well as restructure organizational structures and reengineer management systems. It is about using the most diverse data to optimize decision-making on the local application of fertilizers and pesticides to the soil to increase the productivity of agricultural production.

In crop production, precise, precision, or intelligent farming (Smart Farming) is formed and implemented. It involves the management of land productivity, crops, labor, financial resources, the formation of optimal logistics, taking into account the market conditions. Electronic maps of fields are created, information bases are formed for each field, including the area, yield, agrochemical and agrophysical properties (normative and actual), the state of plants in the corresponding phases of the growing season, etc. Software is being developed for analyzing and making management decisions, as well as sending commands to chip cards that are loaded into robotic devices, agricultural units for differentiated agricultural operations.

In the processing of agricultural products, the most advanced are the technology of contactless reading of information from objects and storage of data RFID (Radio Frequency Identification), as well as automated systems for planning and production management in conditions of rapid changes in volumes and assortment.

With the development of information technologies, the Republic of Uzbekistan needs to focus on organizing and increasing the efficiency of the Information and Consulting Center (ICC) of agro-industrial production and its branches operating in almost every region of the republic. To ensure the consulting work of the ICC, it is necessary to have specialized databases, to attract reference data from existing legal systems, Internet search systems, a knowledge bank, application programs that provide an assessment of the current situation and forecast its development.

One of the relevant areas of the use of IT in agro-industrial production is precision farming, which provides a strategy for managing crop yields using a global positioning system (GPS), geographic information systems (GIS) and technologies, and data from multiple sources about the conditions of plant growth and development and the economic situation of each management unit within a single field.

One of the signs of the use of IT in farms is the presence of computers, as well as their connection to the Internet. IT is used mainly for accounting, agricultural automation.

Modern IT allows farmers to receive advice, recommendations, regardless of the time and place of their location. The farmer can describe his problems through ordinary speech, illustrated with photographs or videos. At the same time, the time and location of the farmer are determined automatically. He can then email his materials to supporting agricultural services and get a response after a while, or he can solve his problem online directly over the Internet.

Expansion of information databases is an important but insufficient condition for their effective use in farms. The initial information should be convenient for assessing biological and physical systems in order to generate useful knowledge about the current state of farms, as well as predict the results in the implementation of various scenarios. The accumulated knowledge in agricultural research over the years should be applied to obtain practically useful information through the

processing of databases. This means that IT is an indispensable source for R&D.

A number of factors contribute to the growth of investment in IT in the region: ongoing economic reforms, privatization, growth in foreign direct investment, significant demand from small and medium-sized businesses, as well as individual users for personal computers and software.

The single IT market is pushing competing companies to increase IT costs and improve information infrastructure.

In general, despite the high share of the manufacturing sector in the economy of the Republic of Uzbekistan, the general level of informatization of enterprises today is extremely low. This is largely due to the general economic downturn in the republic, in which agricultural enterprises cannot afford large financial investments in technologies that increase the efficiency of management and production, albeit in the near future. However, groups of enterprises are already emerging that can become leaders in the use of the most modern and expensive information systems. First of all, these are enterprises with a market share of more than 35%.

The activity of an enterprise in the IT market depends primarily on:

- From the production potential, which characterizes the general state of production (decline, rise) and, as a consequence, the relevance of the enterprise's need for informatization;
- availability of investments, the number and structure of which determines the potential of enterprises as IT customers, as well as the choice of the type of information systems - systems aimed at optimizing production technologies (for example, CAD) and / or systems designed to optimize enterprise management (UIS);
- export potential, which determines the intensity of work in the world market. As a rule, these enterprises strive for maximum compliance of their activities with international standards.

Recently, in the field of agriculture, conditions are increasingly emerging and significant efforts are being made to introduce information technology. The most famous technologies are implemented in the framework of applied computer programs.

As for the scope of use, it should be said rather not about the direction of the enterprise that uses information technology, but about its size. The modern IT market offers solutions for almost any production, from growing wheat to breeding new breeds of chickens. However, for each such solution, there are restrictions on the minimum (however, as well as the maximum) size of the enterprise, within which the implementation will be effective.

The development of information technologies is related to the issues of increasing the efficiency of the functioning of the state information and consulting center (GICC) of the agro-industrial complex and its branches operating in almost every region. To provide consulting work and GICC, it is necessary to have specialized databases, to attract reference data from existing legal systems, Internet search systems, a knowledge bank, application programs that provide an assessment of the current situation and forecast its development.

The need to reduce man-made loads in agriculture, the impact of the applied technologies on the environment, as well as to improve the safety of food products in the process of their production are the main factors that increase the importance of information technology (IT). A significant acceleration of the informatization of agriculture is a key factor in its future sustainable development, for example, in addition to technological calculations, information technologies should be used.

Due to the limitation of the amount of stored information in the human brain, only a few factors can be considered at the same time; therefore, intuitive methods are also used.

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